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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,972	10/29/2001	David J. Graves	1070-P02689US1	3303
110	7590	11/03/2003	EXAMINER	
DANN, DORFMAN, HERRELL & SKILLMAN 1601 MARKET STREET SUITE 2400 PHILADELPHIA, PA 19103-2307			GOLDBERG, JEANINE ANNE	
			ART UNIT	PAPER NUMBER
			1634	

DATE MAILED: 11/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/052,972	GRAVES ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jeanine A Goldberg	1634	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 11-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/29/01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
    If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
    a) ☐ All    b) ☐ Some \*    c) ☐ None of:  
        1. ☐ Certified copies of the priority documents have been received.  
        2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
    \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
    a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. This action is in response to the papers filed July 28, 2003. Currently, claims 1-14 are pending. Claims 11-14 have been withdrawn as drawn to non-elected subject matter.

### ***Election/Restrictions***

2. Applicant's election without traverse of Group I, Claims 1-10 in the paper filed July 28, 2003 is acknowledged.

### ***Priority***

3. This application claims priority to 60/244,110, filed October 27, 2000. It is noted that the disclosure of the priority document and the instant application are not identical.

### ***Drawings***

4. The drawings are acceptable.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Miller et al (US Pat 5,148,136, May 23, 1995).

Miller et al. (herein referred to as Miller) teaches a method for preparing microarrays of biological entities on a solid support. The microarray device contains a substrate which has an attachment layer formed from a chemical such as dendrimer, star polymers (col. 4, lines 3-6). Figure 6 illustrates a surface which comprises a substrate, an attachment layer, a receptive material. The substrate may be glass, plastic, silicon, for example (col. 5, lines 34-36)(limitations of Claim 8). The attachment layer may be a dendrimer (col. 5, lines 40-41). The attachment materials selected must be compatible with the biological or receptive materials, must physically adhere or covalently attach to the upper test surface (col. 24, lines 66-67)(limitations of claims 4-5). Silanization can introduce groups capable of covalently attaching the molecule by chemical means (col. 25, lines 40-41). The attachment layer is spin coated or aerosol spray coated (col. 26, lines 29-32). Figure 18 illustrates a star polymer or dendrimer, a polyamidoamine (col. 27, lines 37-40)(limitations of Claims 6-7). Miller teaches using MSA-Starburst; 5<sup>th</sup> generation obtained from Polysciences, Warrington, PA (col. 58, lines 10-20). The attachment layer was cured for 120 minutes, a predetermined time period (col. 58, lines 18)(limitations of 9). The receptive material is one part of a specific binding pair such as oligonucleotides, DNA, RNA, viruses, bacteria (col. 28, lines 40-49)(limitations of Claims 2-3). The receptive material is bound to the attachment layer (col. 28, lines 50-51). A wide range of techniques may be used to adhere the receptive material to the attachment layer including application of solution in discrete arrays or

patterns; spraying, ink jet, or other imprinting methods (i.e. microspotting) (col. 29, lines 65-68)(limitations of Claim 1b).

***Allowable Subject Matter***

6. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 10 is drawn to storing the treated support for a time period of at least two weeks before carrying out the microspotting step. The prior art teaches numerous methods of storing solid supports up to about 2 weeks once oligonucleotides are spotted thereon. The prior art fails to disclose storing functionalized supports prior to microspotting for at least 2 weeks. The instant specification demonstrates microspotting nucleotide probe after one day, one week and two weeks. As seen in Figure 4, improved results are obtained with the support which was spotted after two weeks. The instant specification, page 27, teaches that incubation time periods were required for the dendrimeric polyamine-bearing glass slides. The specification states that "these results indicated that the optimal use of the dendrimeric polyamine-bearing glass slides occur approximately two weeks after the dendrimers are adsorbed to the slides" (page 28). Thus, since the instant specification indicates that a particular period of time has unexpected benefits over alternative time periods, allowing the solid support to be stored for at least two weeks before microspotting is novel and unobvious over the art.

### ***Conclusion***

**7. Claims 1-9 are not allowable over the art. Claim 10 is objected to as being dependent upon a rejected base claim.**

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A) Beier et al. (Nucleic Acids Research, Vol. 27, No. 9, pages 1970-1977, May 1999) teaches a method of versatile derivatisation of solid support media for covalent bonding on DNA-microchips. First, Beier teaches preparing the support media using microscope slides, non-derivatized microscope slides, aminoalkylsilane derivatized ones and plasma-aminated polypropylene slides. Next the linker system was synthesized such that the slides were incubated and acylation reacted and amine reacted slides were used. The surface of the slides were activated for immobilization of nucleic acids. The activation was effected by PDITC or DSC or DMS. Beier teaches that after acylation of a surface-bound-amino-group, a polyamine may be used to produce a branched, dendrimeric structures. Finally, spotting onto activated support surfaces was performed by dispensing system or pin-tool based spotting robot (page 1971, col. 2). The method of Beier does not use preformed dendrimeric polyamines, but rather synthesizes dendrimers on the solid support.

B) Benters et al. (Chembiochem, Vol. 2, No. 9, pages 686-694, September 2001) teaches a method of reacting a functionalized solid support with a starburst dendrimer. As seen in Scheme 1, the dendrimer are attached to the support. Benters teaches


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spotting oligonucleotides upon the solid support (page 691, col. 1). Benters does not qualify as prior art.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Jeanine Goldberg whose telephone number is (703) 306-5817. The examiner can normally be reached Monday-Friday from 8:00 a.m. to 5:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones, can be reached on (703) 308-1152. The fax number for this Group is (703) 305- 3014.

Any inquiry of a general nature should be directed to the Group receptionist whose telephone number is (703) 308-0196.

  
**Jeanine Goldberg**  
**Patent Examiner**  
October 30, 2003